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FACTORS THAT AFFECT USE OF WOOD SIDING MATERIALS IN SINGLE-FAMILY HOMES

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FACTORS THAT AFFECT USE OF WOOD SIDING MATERIALS IN SINGLE-FAMILY HOMES

Robert E. Benson

INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION
Forest Service
U.S. Department of Agriculture
Ogden, Utah 84401
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HIGHLIGHTS

- Wood siding was most common in northern and northeastern cities and was used least in southwest and southeast cities.
- About 46 percent of the siding used in homes surveyed was of wood-based materials.
- Fiberboard was the most widely used wood-based siding, accounting for about one-fifth of all siding used.
- Architectural requirements influence type of siding but not always material used.
- Builders recognize certain cost advantages and disadvantages of various sidings, but cost factors do not usually alter traditional geographic preferences.
- Most builders either select the siding for the home or limit the choice of siding they offer to buyers.
- Esthetic appeal and product improvement are keys to wood siding's market future.

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NEED FOR MARKET APPRAISAL

Exterior siding used on houses has until recently been limited to lumber, brick or other masonry, wood shakes, stucco, and several composition materials. During the past two decades, however, new siding products have been developed, particularly sheet and board materials including nonwood sidings of aluminum and plastics, as well as new types of wood-based sidings, such as fiberboard, plywood, and wood overlaid with nonwood materials. These new products have gained market acceptance because of changes in homebuilding design and techniques and the need to reduce installation and maintenance costs.

In view of these developments, an appraisal of the market outlook for siding is vital for planning by timber resource managers. The utilization of existing stands of timber and the regulation of species and quality depend in part on the types of products desired. Obviously, the species or qualities of wood needed for sawn lumber siding, wood shakes, fiberboard, and overlaid wood sidings vary greatly. Such an appraisal also is vital for manufacturers of wood products; they can best convert timber into desirable products when the market criteria their products must meet are clearly defined.

Any complete appraisal of the siding market must consider such factors as technological developments in products and trends in building activity, as well as the market criteria of builders and buyers. However, this study was limited to the following objectives:

1. Identifying geographic differences in metropolitan markets.

2. Determining the relative importance of builders, home buyers, and suppliers in selection of siding.

3. Identifying and evaluating the relative importance of various factors that constitute the market criteria for siding such as (a) appearance, (b) maintenance requirements and other performance characteristics, (c) availability and suppliers' services, (d) style and price of the home, (e) cost, including price and installation, and (f) home buyers' preferences and options.

4. Evaluating how well wood sidings meet the more important criteria identified and what changes are needed to improve their acceptance.

5. Appraising the market outlook for wood sidings.

The study is based on personal interviews with 82 builders in 20 cities throughout the continental United States. These cities were chosen at random from metropolitan areas with 100,000 or more population. Sample builders were selected from the yellow pages of the telephone directories. The study covers 5,243 houses built either in 1965 or 1966, depending on which year the builder was interviewed.

VARIATIONS IN USE

Wood-based siding accounted for about 46 percent of all siding used in the 5,243 houses covered in this survey and was the principal siding used in about 41 percent of these houses. Fiberboard was the leading wood-based siding used and brick the most common nonwood siding used. Builders often use one material for the principal siding and a second material for accent panels or gable ends, which is reflected in the following tabulation. For example, plywood was used mostly as a secondary siding; thus, it accounted for 4 percent of all siding used, but was the principal siding used in only 1 percent of the houses.

Material	Percent of all siding used	Percent of homes in which material was principal siding
Brick	28	29
Wood-based:		
Fiberboard	21	20
Shake	11	13
Lumber	9	7
Plywood	4	1
Overlaid lumber and plywood	1	<0.5
Subtotal	46	41
Other:		
Aluminum	9	10
Asbestos	4	4
Block	5	5
Stucco	8	11
Subtotal	26	30

Wood was the leading siding used in only five of the cities surveyed, brick in eight cities, stucco or block in four cities, and other materials in three cities (fig. 1). However, wood accounted for a significant share of siding used in most cities (fig. 2). Wood's share of the market was less than 10 percent of all siding used in only five cities. Individual builder use within cities varied considerably from these siding-use patterns. Wood is most often used in cities in the north and northeast, and used least in southwestern and southeastern cities.

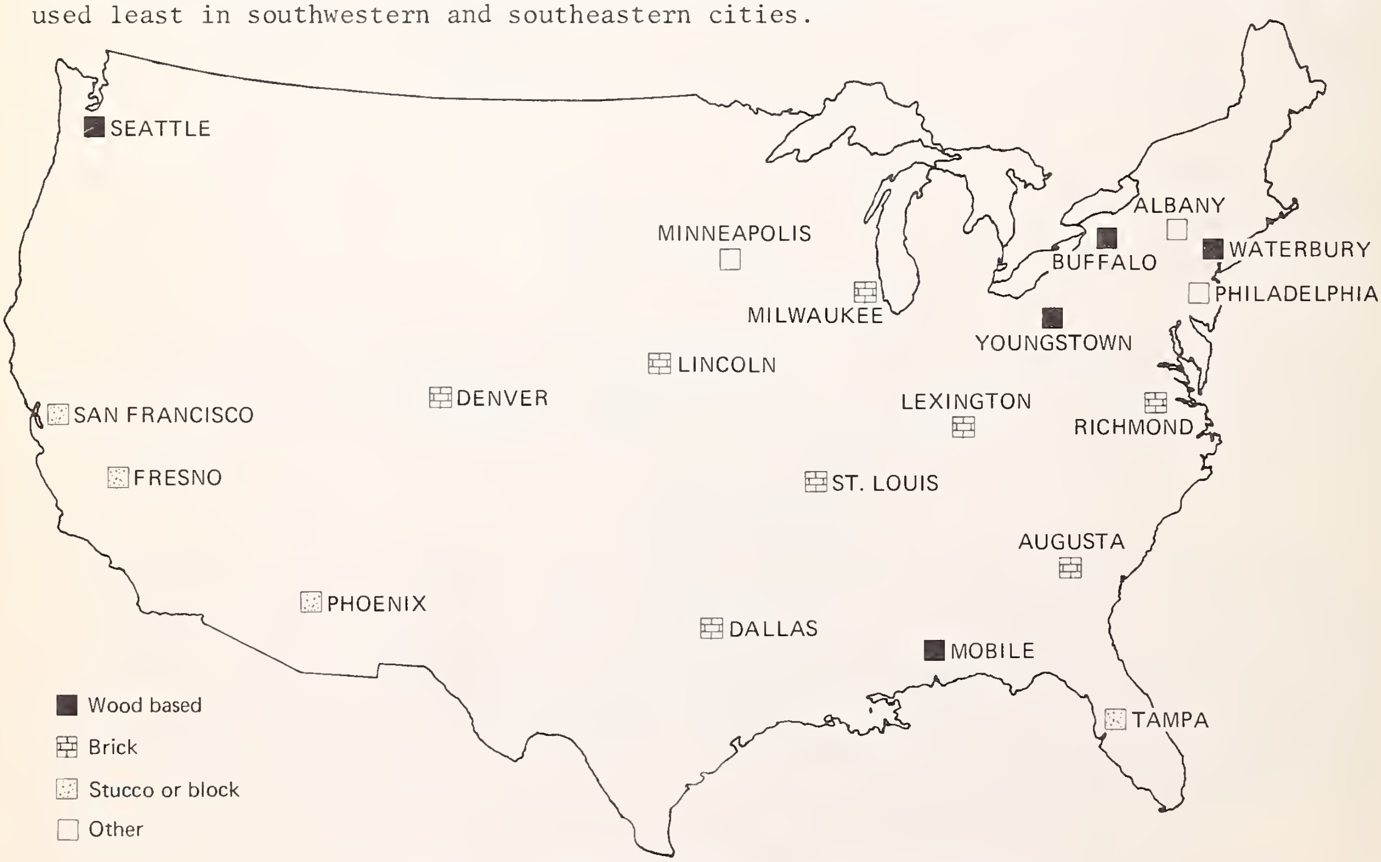

Figure 1.--Leading siding materials in sample cities.

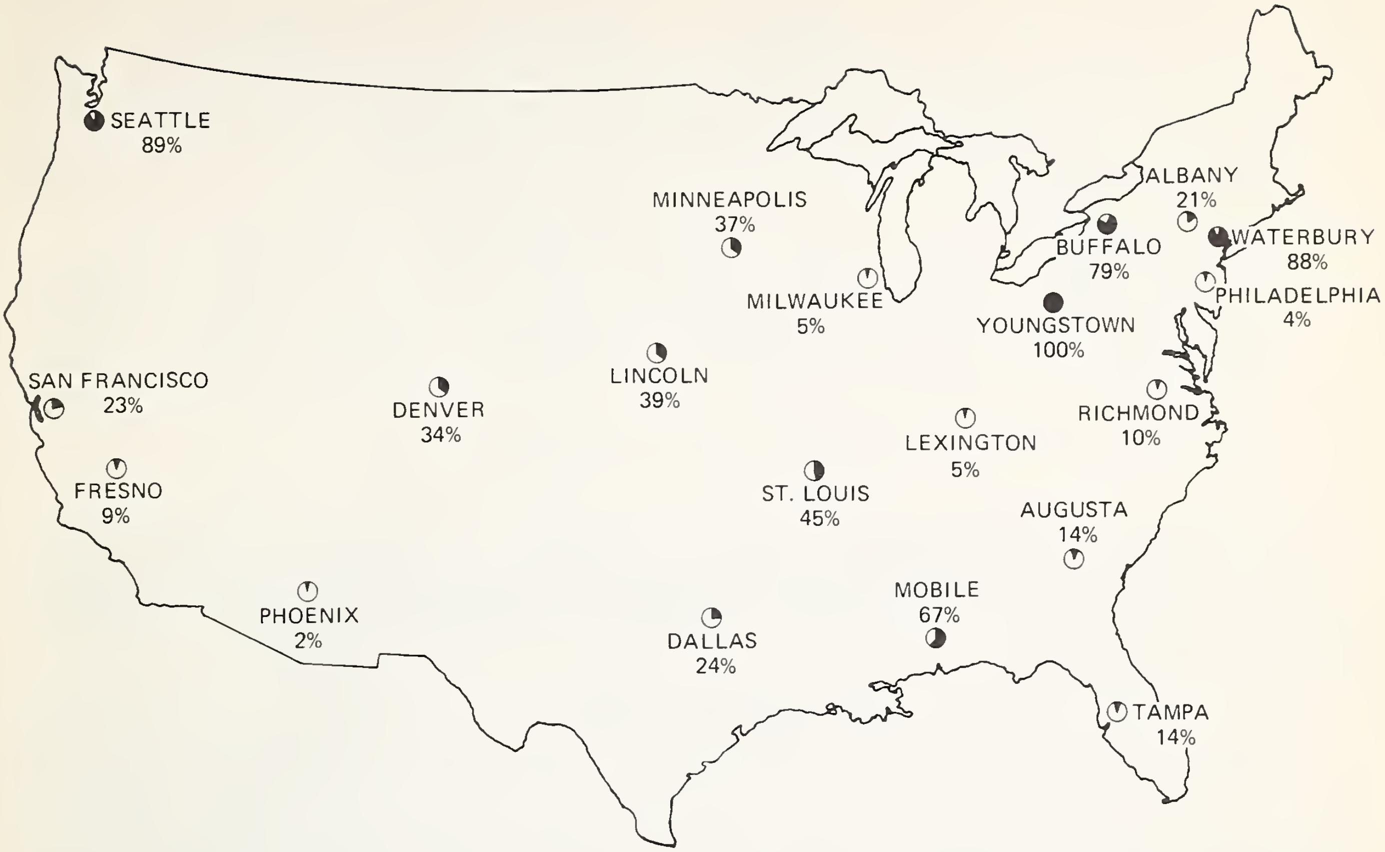

Figure 2.--Wood-based siding share of all siding materials used in sample cities.

Traditional preferences for certain materials in part explain the differences in siding use between cities. Wood shakes are a long-time favorite in New England, stucco is popular in the southwest, and some cities and areas are known as "hard materials" markets where brick and masonry are preferred. These preferences often stem from such technical characteristics of the material as maintenance properties, architectural suitability, or cost.

RANKING OF FACTORS THAT DETERMINE CHOICE OF SIDING

A builder's selection of siding is seldom based on only a single criterion, but rather on a number of considerations--specific criteria or problems that vary among builders and locations (such as the particular performance conditions encountered, or the style of home that is favored). Different builders may consider the same factors highly important but end up using different siding materials. This is shown in the following tabulation:

Factors	Most important	Second most important	Third most important
	(Percent of builders)		
Style and architecture	29	13	2
Home buyers' options and preferences	26	10	10
Price of siding, price of home	23	15	13
Maintenance, performance	9	37	29
Installation, finishing	6	12	9
Availability, supply services	1	4	2
Other	6	6	5

It can be noted that the factors that rate high in importance include some of wood's strongest advantages--style, appearance, and regional preferences--as well as some of its greatest disadvantages--maintenance requirements and performance (particularly dimensional instability).

ARCHITECTURAL STYLE

Siding is a conspicuous part of the house and if a certain architectural effect is desired, siding plays a big part in creating that effect. Two out of three builders in this study indicated that architecture, style, and appearance had some bearing on their choice of siding. For example, among those who built colonial style houses, most (70 percent) used lap-type siding ("bevel," "drop," or "clapboard") to achieve the proper architectural effect. Lap siding, brick, and board and batten sidings predominate in other traditional styles such as "provincial," "plantation," etc. In contemporary houses, all types and patterns are common, but builders frequently select a siding to create a desired effect; for example, board and batten, channel groove, or v-groove lumber, or grooved plywood to carry out vertical lines in a house, or lap siding to create a low profile. Use of two or more sidings is particularly common in contemporary styles.

The style of the house does not necessarily determine which siding material is used, however, because most types and patterns of siding are available in a number of materials that provide a similar architectural effect. For example, lap siding is available in lumber, fiberboard, aluminum, asbestos, vinyl, and several other materials. Therefore, builders can achieve the "proper" type siding using whatever material they or their home buyers prefer. There are exceptions to this, of course, such as the "Spanish villa" style where stucco is considered to be the only "proper" siding.

APPEARANCE

Although similar overall architecture and pattern can be achieved with several siding materials, some builders note differences in the appearance qualities of these materials. About one-third of the builders (mostly smaller builders of high-priced homes) commented favorably on the appearance qualities of some specific sidings. Of these builders,

47 percent cited favorable appearance of lumber
21 percent cited favorable appearance of plywood
18 percent cited favorable appearance of brick
14 percent cited favorable appearance of other materials

Favorable comments on lumber are that it is "authentic," has a quality image, and gives a heavy shadowline on lap siding. Both lumber and plywood with rough-texture surfaces are favored for creating a rustic effect where this is desired in ranch and rustic style houses. Brick also has a "proper" look and quality image, according to builders.

On the other hand, several siding materials were reported to have unfavorable appearance qualities. About one in six builders noted appearance shortcomings of certain sidings, particularly aluminum, fiberboard, and asbestos. Their comments included "low price image," "lack beauty," "tract image," and "not good looking." Nearly all of these builders were located in cities where the materials involved are commonly used.

MAINTENANCE AND PERFORMANCE

Differences in maintenance requirements and other performance characteristics among siding materials contribute to geographic variations in siding use. Furthermore, the builder usually feels that using materials that are as troublefree as possible is necessary to prevent callbacks and to enhance his reputation.

Wood sidings offer some performance advantages, according to builders. In general, wood sidings are considered strong, durable, and resistant to damage. Builders in northern cities noted the good insulating properties of wood. Fiberboard and plywood are considered warpfree and resistant to splitting, and lumber and fiberboard are considered easy to paint by some builders.

On the other hand, wood sidings have some major shortcomings. The most common criticism of builders is that wood sidings require painting (or staining) initially--that subsequent paint maintenance is needed. In the Southwest, extreme heat and dryness result in short paint life (several builders mentioned "no more than 2 years"); this is the main reason for low wood use in that area. In other areas, maintenance problems are not so severe but some paint peeling on lumber and fiberboard, and staining and bleeding on wood shakes were reported.

Instability was another criticism made of wood sidings--checking of plywood surface, warp and shrinking of lumber, and buckling and shrinkage of fiberboard. All detract from the appearance of the siding; shrinkage after the siding is installed, for example, results in unpainted gaps along the edges of sidings such as lap and board and batten.

Comments on maintenance and performance of nonwood sidings were mostly favorable. Aluminum, brick, asbestos, stucco, and vinyl are generally considered maintenance-free. Some builders did however cite shortcomings of aluminum--it "pops" due to expansion when temperature changes, it dents easily from hail, and is difficult to repair if damaged.

Figure 3 gives an overall picture of builders' comments on the maintenance and other performance characteristics of siding materials. The effect of these factors on builders' use of wood varies among individual sidings and by geographic areas, but nonwood sidings are generally favored over wood sidings in terms of maintenance and performance.

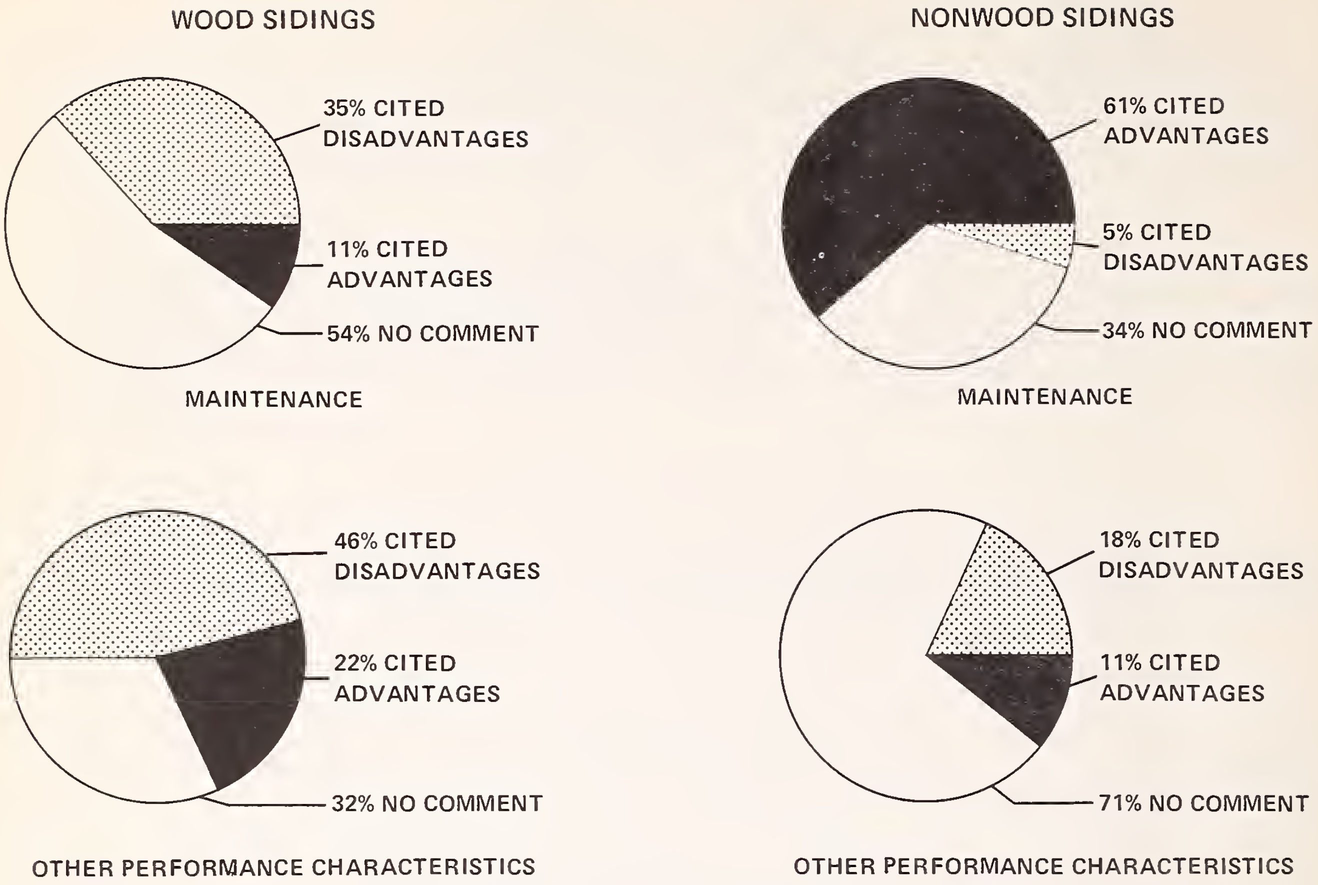

Figure 3.--Builders' comments on maintenance and other performance characteristics, wood and nonwood sidings.

BUYERS' INFLUENCE

Home buyers have a strong influence on builders' choice of siding as a result of their regional preferences for certain materials--shakes in the Northeast, stucco in the Southwest, brick in individual cities. Home buyers were not contacted; therefore, it was not possible to identify firsthand what leads to these preferences. Builders indicate that maintenance, insulation, image, and other factors contribute.

Home buyers also have a direct influence on siding use when they are given options on siding. Among the builders,

29 percent	offered a choice of any siding material
28 percent	offered a limited choice of siding material
13 percent	limited choice of siding to only most expensive homes
30 percent	did not offer choices or options on siding.

Many builders indicated, however, that buyers usually ask the builder's advice on which siding he should choose, and frequently select the type shown on model homes. Therefore, the builder has considerable influence even when the buyer has a choice. Some builders also limited the choice of siding to those materials that are similar in cost, or offered other sidings on an "at cost" basis. In addition, several builders limited the buyer's choice to secondary siding (trim or accent panels).

About one-third of the builders used siding as a sales feature of the house. Brick and aluminum were featured as "maintenance-free," fiberboard and lumber as "easy maintenance," and a few builders used guarantees offered by fiberboard manufacturers as a sales point. Appearance of lumber and fiberboard was occasionally used as a sales point. Overall, however, builders indicated that siding is not a major sales feature because buyers more or less take siding for granted, particularly in the case of materials that are common and preferred in the area.

In a few cities, builders reported land developers require that a certain proportion (usually 50 percent or more) of each house be brick sided. Reportedly this is to insure property values through use of a "permanent" good-looking siding and to achieve a look of compatibility and prestige in the development.

COSTS

The installed cost of siding has some effect on siding choice, but it is not the deciding factor in most cases. For example, the installed cost for brick is higher than for other sidings, but the extent to which brick is used even in lower priced homes indicates that local preferences often take precedent over lower cost alternatives. On the other hand, cost appears to weigh heavily in builders' choice of board or sheet type sidings. One of the main reasons builders gave for not using more overlaid siding or vinyl siding is that it costs more than other materials. If a siding costs much more than fiberboard or aluminum, for example, it is competing with brick. Several builders said they would prefer brick to a high-cost sheet or board siding because brick is considered a prestige siding.

Costs vary among individual builders because of differences in grade or quality of materials used and differences in methods of allocating labor cost. Brick siding does cost considerably more in cities in the North than in cities in the South (table 1). Most of this cost difference is because of the wage differential for bricklayers.

Table 1.--Average costs per square foot for purchase installation, and finishing of siding materials[1]

Siding material	Purchase price	Installation	Finishing	Total
	- - - - - - Dollars per square foot - - - - - - -			
Aluminum	0.27	0.17	--	0.44
Brick, North[2]	.49	.81	--	1.30
Brick, South[2]	.36	.35	--	.71
Fiberboard	.22	.13	.09	.44
Lumber	.24	.13	.10	.47
Plywood	.20	.13	.11	.44
Stucco[3]	--	--	--	.35

[1] These are averages of 1965 and 1966 costs as reported by builders, based on their records or estimates. No attempt was made to adjust for differences in quality of materials used.

[2] North: Albany, Buffalo, Lincoln, Milwaukee, Philadelphia, Richmond, and St. Louis. South: Augusta, Dallas, Denver, Lexington, and Mobile.

[3] Cost breakdown not available.

Wood sidings are generally considered easy to install. Builders feel wood sidings are easy to cut and fit with conventional tools and do not require special skills. Some other specific advantages reported were: lumber is lightweight and rigid, which makes it easy to handle; fiberboard comes in uniform lengths, which minimizes waste; plywood is easy to install because it comes in large sheets. Several builders (mostly those who build one-story brick or block houses) purchased prefabricated gable end roof trusses with plywood or fiberboard siding already installed, which reportedly reduces labor costs.

Several builders reported some installation problems with lumber: "it splits"; "warp and odd lengths create waste." Only a few builders had used overlaid wood sidings and although these apparently are readily workable (sawing, fitting, etc.) they are reportedly subject to damage during installation. The few comments on installing nonwood sidings included: "aluminum is lightweight to handle but dents easily"; "brick requires skilled labor"; "using aluminum means dealing with a separate applicator crew"; "brick is difficult to work with in cold weather." Comments of builders on siding installation are summarized in figure 4.

Raised grain, flat grain, and other irregularities cause problems when painting lumber and plywood siding. Fiberboard, in contrast, is considered an easy material to paint because of its smooth uniform surface. However, some builders feel that the prepriming on fiberboard is too thin to serve as the primer coat.

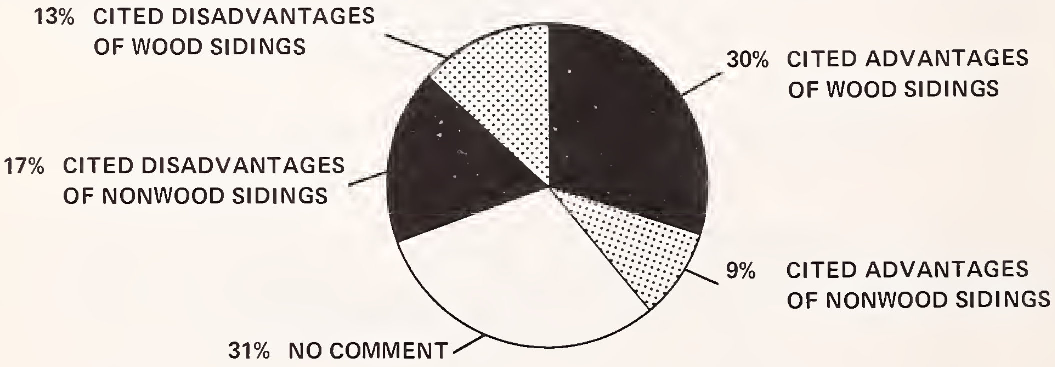

Figure 4.--Builders' comments on installation of siding materials.

AVAILABILITY AND SUPPLY SERVICES

Availability of siding and suppliers' services are not generally considered to be critical factors in the builders' choice of siding. Siding availability is mostly good and suppliers' services are adequate. For many builders, siding is just one part of the overall construction materials package and their choice of suppliers is based on receiving good service on a wide range of building items.

Retail yards are the most common source of wood sidings. Over three-fourths of the builders who use lumber, plywood, or fiberboard purchase these sidings from retailers (table 2). In terms of volume, however, manufacturers and wholesalers are also major suppliers. Retailers are used more often by builders who purchase only small quantities of wood sidings, such as small builders (who build few houses), and builders who use wood siding mostly for such features as accent panels, etc. Wholesalers and applicators are major supply sources for aluminum siding.

Builders use a number of different supply sources for siding, but no substantial differences in suppliers' services (prompt delivery, credit, discounts, etc.) were cited. However, about one-fifth of the builders who used lumber siding noted that it was difficult to obtain. They were mostly builders who used only a small volume of lumber siding and purchased from retailers. About 15 percent of the builders indicated that information on siding is lacking. Mostly their comments pertained to wood sidings: "need more information on buckling of fiberboard," "more information on painting wood needed," "better price and grade information of lumber siding," "wood needs more promotion."

Table 2.--Supply source for selected siding materials, percent of builders, and percent of volume[1]

Supply source	Lumber		Plywood		Fiberboard		Aluminum	
	Builders	Vol.	Builders	Vol.	Builders	Vol.	Builders	Vol.
	Percent							
Retailer	79	41	73	26	82	50	32	9
Wholesaler	3	3	4	20	6	26	32	78
Manufacturer	18	56	9	52	6	21	5	--
Other[2]	--	--	14	2	6	3	31	13

[1] Percent of builders based on number who purchased the siding material from each source. Percent of volume based on how much purchased from each supply source.

[2] "Other" for plywood and fiberboard--prefabricators who supply siding installed on roof truss gable ends; "other" for aluminum--primarily applicators who supply and install the siding.

MARKET OUTLOOK FOR WOOD SIDINGS

The desire on the part of some home buyers for "genuine," "authentic," and "traditional" sidings will probably assure a continuing demand for such siding materials as lumber, shake, and brick. Rough-sawn lumber and plywood sidings have become highly popular in some cities because of their rustic effect. These esthetic requirements of some builders and home buyers can probably be met only by "real" wood sidings.

On the other hand, a large segment of the siding market is not strongly committed to any one material. Although the general trend toward more expensive homes is currently encouraging the use of "authentic" sidings such as lumber and brick, builders' comments on what sidings they expect to use in the future indicate an interest in new siding materials that solve problems of performance and maintenance and reduce costs. Several builders who recently changed to aluminum siding said they made this change because of the buyer's request. Apparently advertising aimed at the home buyer has been successful in promoting aluminum.

It seems likely that all competing sidings will have to measure up to a certain minimum level for all criteria including cost, maintenance, suitable appearance, and workability. Among several nonmasonry sidings, total installed costs differ by only a few cents per square foot. This permits greater influence of noncost factors on choice of siding even if the builder has fairly rigid cost objectives or limitation. It is notable also that vinyl and overlaid wood sidings are not widely used as yet, apparently because of higher installation costs, even though they have other favorable characteristics.

It appears then that some improvements in wood sidings must be made if these are to remain competitive, particularly if certain disadvantages of competing sidings are to be overcome. Improvements needed in wood sidings include: reducing maintenance, improving stability (warping and checking), providing more technical and promotional information, and preventing periodic shortages at the builder level.

Benson, Robert E.
1968. Factors that affect use of wood siding materials in single-family homes. U.S. Dep. Agr., Forest Serv., Intermountain Forest and Range Exp. Sta., Ogden, Utah 84401. 10 pp., illus. (U.S.D.A. Forest Serv. Res. Pap. INT-57)

A survey of builders in 20 cities throughout the Nation shows preferences for siding materials vary regionally. Wood-based sidings are favored for appearance and workability, but are more difficult to maintain than are several other leading nonwood siding materials. The market outlook for wood sidings depends partly on improving maintenance and other performance properties and partly upon the continuing esthetic appeal of wood to home buyers.

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